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Federal Aviation Administration

General Aviation Airworthiness Alerts

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Improve Reliability-Interchange Service Experience

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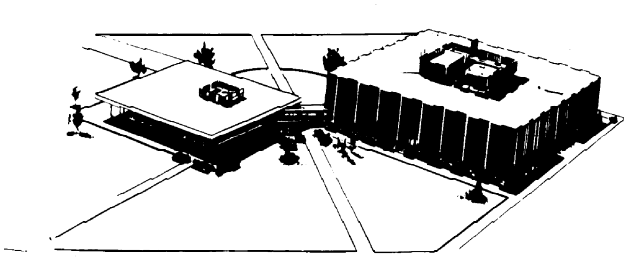
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20590

GENERAL AVIATION AIRWORTHINESS ALERTS



FLIGHT STANDARDS SERVICE
Mike Monroney Aeronautical Center

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA;
ATTN: Designee Standardization Branch (AFS-640);
P.O. Box 25082; Oklahoma City, OK 73125-5029.

AIRCRAFT

AMERICAN CHAMPION

American Champion Models -7, -8, and -11 Series Aircraft	**Wing Spar Structural Failure 5711**

On page 4 of the May 1997 edition of this publication, we printed a detailed article concerning wing spar compression cracks on various American Champion models.

Since the May 1997 article was published, we have received several other reports of wing spar compression cracking. The previously mentioned article references Airworthiness Directive (AD) 87-18-09 and American Champion Service Letter (SL) No. 406. AD 87-18-09 requires compliance only for the Model 8GCBC aircraft. The FAA Service Difficulty Program data base contains a total of 14 similar reports. Three of those reports are dated after the May 1997 article was issued. Since the May 1997 article was published, the FAA has reviewed and approved the technical contents of American Champion Aircraft Corporation (ACAC) SL No. 406, dated March 28, 1997, and SL No. 417, Rev. A, dated October 2, 1997.

One report reads a crack indication would not "sand out." (Note: "Sanding out" crack indications is not recommended because this could cover the crack. It is recommended that a sharp knife be used to gently "shave" the surface to determine whether or not the indication is a crack.) The submitter's partner "pulled down" on the wingtip, and the spar broke. Another report stated: "Performed wing spar inspection per ACAC SL No. 406 (and AC 43-16, General Aviation Airworthiness Alerts No. 226, dated May 1997). Longitudinal cracks outboard of the wing strut attachment plates were found. The aircraft had been used extensively for aerobatic flight, and even though it was not applicable to the

Model 8KCAB aircraft, compliance with the inspection requirements of AD 87-18-09 had been accomplished. No previous accident damage had been reported, and the aircraft was "hangared" when not in use. One other report stated a 12-inch crack was found during inspection in accordance with SL No. 406.

SL No. 406 includes procedures for conducting a detailed visual inspection of both the front and rear wood wing spars for cracks (compression cracks and longitudinal cracks). Compression cracks typically initiate on the top (or sometimes the bottom) of the spar adjacent to the wing spar strut attachment fitting doubler plates. Compression cracks can originate during normal flight operations or can be caused by wing/ground impact incidents.

SL No. 417 includes procedures for installing two newly-designed inspection covers (4.5 inches by 6 inches) on the top of each wing. The inspection covers are located at either end of the spar doubler plates. Consult SL No. 417 for the location and number of inspection covers and drain holes to be installed on the lower wing surface.

A National Transportation Safety Board (NTSB) recommendation cited a 1995 ACAC Model 8GCBC accident, which was attributed to an in-flight wing spar compression crack-type structural failure. FAA AD 87-18-09, a one-time spar face inspection, had been complied with 8 years previously. The NTSB recommended an AD be issued to supersede AD 87-18-09, and referenced Canadian AD CF-92-07, which involved a 500-hour repetitive inspection, based on data that was not available at the time that FAA AD 87-18-09 was issued.

After examining the circumstances and reviewing all available information related to the referenced accident and other accidents and incidents, including the relevant service information, the FAA has determined that (1) the wing design of all -7, -8 and -11 series airplanes, equipped with similar wood spars, are conducive to spar cracks/damage; and (2) AD compliance action should be taken to prevent possible compression cracks and other damage in the wood wing spar, which if not detected and corrected, could eventually result in in-flight structural failure.

The FAA has requested that the manufacturer (ACAC) mail a copy of SL No. 406 to all 239 registered ACAC Model 8GCBC owners and to all 6,440 registered ACAC Model -7, -8 and -11 series owners. A Notice of Proposed Rule Making (NPRM) for Airworthiness Directive (AD) action was published in Docket No. 97-CE-37-AD in the Federal Register (FR) Volume 62, No. 11, dated September 26, 1997. The comment period for the NPRM ends November 28, 1997, for ACAC Scout Model 8GCBC airplanes. Another NPRM was published in Docket No. 97-CE-79-AD for -7, -8, and -11 series airplanes, in the Federal Register, Volume 62, No. 212, dated November 3, 1997. The comment period for this NPRM ends January 8, 1998. Both NPRM's require inspections of wood wing spars in accordance with ACAC SL's No. 406 and No. 417 to determine if structural damage has occurred.

BEECH

Beech	**Nose Landing Gear**
Model C-23	**Collapse**
Sundowner	**3222**

During landing, the nose gear collapsed. The aircraft sustained substantial damage.

An investigation disclosed the nose gear strut compressor assembly (P/N 169-610012-15) had broken at the attachment ear on the bottom of the assembly. This caused loss of the shock absorber pin (P/N 169-810000-81). The landing gear fork then separated from the compressor assembly. The submitter speculated this may have been the result of previous abuse of the nose landing gear, as well as metal fatigue induced by age. The nose gear compressor assembly should be given close attention

during scheduled inspections and especially after reports of nose landing gear damage.

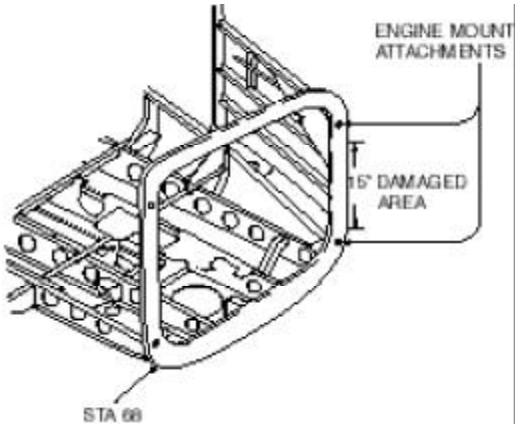
Part total time-3,575 hours.

Beech Model B24R Sierra — **Severe Fuselage Structural Corrosion 5311**

During a scheduled inspection, severe corrosion was found on a fuselage structural frame at fuselage station 68.

The corrosion had consumed an area approximately 15-inches long on the left side of the frame (P/N 169-400025-61 which was superseded by P/N 169-400025-11) where it contacted a cabin inlet fresh air "scat" tube (P/N 111728-808-23). The damaged area was located between the upper left and lower left engine mount attachment points. The corrosion had completely penetrated the material thickness. (Refer to the following illustration.) Several other more isolated corrosion sites were found at other locations on the frame. It appeared the corroded areas coincided with places where the "scat" tubing contacted the metal frame. The submitter suggested this area be closely checked during each scheduled inspection. The "scat" tube should be repositioned to provide clearance from the frame.

Part total time not reported.



Beech Model F33A Bonanza — **Missing Rudder Cable Pulley 2720**

During maintenance, one of the two rudder cable pulleys was missing at Fuselage Station (FS) 68. A new pulley was installed at this location.

Although the manufacturer's maintenance manual shows two rudder cable pulleys installed at FS 68, the Illustrated Parts Catalog (IPC) (index 10, page 2, figure 153B) shows only one pulley. Figure 153B shows "units per assembly" as five and indicates they are installed at FS 68, FS 175, and FS 233. The "usable on code" was applicable to the reported aircraft serial number.

After a thorough investigation and consultation with a Beech representative and the American Bonanza Society, it was determined that only one rudder cable pulley is supposed to be installed at FS 68. The five pulleys, which are called for by the IPC, are located at FS 68 (one pulley), FS 175 (two pulleys), and FS 233 (two pulleys). The extra pulley at FS 68, for this serial number aircraft, should not have been installed.

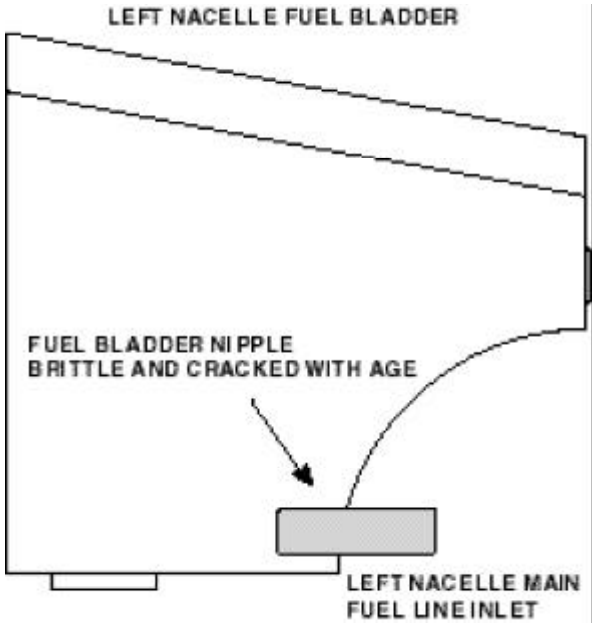
This mistake could have happened to many of us; however, close attention to detail and research could prevent this type of mistake. When you are not sure, don't be afraid to ask questions. Use all the tools at your disposal to ensure the action you are taking is correct. This problem did not cause a safety problem before it was corrected; however, other similar mistakes could have fatal results. The submitter of this report was advised to return the rudder control cable system to its original configuration by removing the extra pulley installed at FS 68.

Part total time not reported.

Beech Model E90 King Air | **Fuel Leak 2810**

After returning from a flight, the pilot reported a massive fuel leak just prior to engine shutdown. The fuel shutoff valves were set to the "off" position with no effect.

An investigation disclosed the left main fuel cell nipple had become brittle and was severely cracked. (Refer to the following illustration.) This aircraft was manufactured in 1977, and the bladder fuel cell (P/N 92-920020-3) in the nacelle was believed to be original equipment. Through research of this problem, it was learned that the manufacturer had changed the composition of the nipple material after 1979 to improve its durability.



At this time, the manufacturer is reviewing research data and considering establishing a life limit for bladder fuel cells and their components. The present replacement requirement for the bladder cells is "on condition." The submitter recommended that any fuel cell over 15 years old be inspected frequently and replaced when necessary.

As with virtually all other things manufactured or altered by man, these parts will revert to their natural state. With all of our efforts we can only slow that process. Such is the case when metals corrode or rubber products deteriorate. The deterioration of rubber products has been the source of many aviation problems in the past and continues at an accelerated rate as those products approach the end of their useful life.

If anyone can offer a solution to this problem, the world will be theirs!

Part total time-4,742 hours.

Beech Model 99 Airliner | **Pilot's Auxiliary Hatch Security 5200**

Information for this article came from FAA Safety Recommendation 97.059.

The FAA received a report indicating the pilot's auxiliary hatch separated from the aircraft. It was speculated the separation was caused by the latch mechanism not being properly secured. This is an item on the "predeparture" checklist and includes limited instructions to check the security of the hatch.

FAA Safety Recommendation 97.059 suggests that the pilot review the airplane flight manual which is contained in the Pilot's Operating Handbook (POH) before starting engines and before takeoff. The aircraft maintenance manual requires an inspection of the pilot's compartment hatch every 100 hours time in service.

Part total time not reported.

Beech Model 200 King Air — **Brake Line Wear 3242**

During a scheduled inspection, a "groove" was found to be worn into a wheel brake tube at the copilot's position.

It was discovered that the copilot's left rudder pedal push-pull rod was in contact with the brake tube (P/N 101-580028-1) when the rudder pedal was moved. The rudder pedal push-pull rod-end was attached to the pedal with a castle nut and cotter pin, and one end of the cotter pin contacted the brake tube. A groove had been worn in the tube leaving approximately .010 inch of the wall thickness. A new tube was installed and positioned to allow for proper clearance and security. Rupture of this tube would have resulted in a complete loss of brake pressure and created a hazardous condition in the cockpit.

Part total time-7,230 hours.

Beech Model 400A Beechjet — **Defective Main Landing Gear Emergency Door Uplock Release Cable 3231**

During a maintenance preflight inspection, the left main landing gear emergency door uplock release cable was found to be defective.

The cable (P/N 128-380021-15) had several broken strands where it was swaged into the terminal "eye" fitting (P/N MS20668). The submitter speculated this defect was caused by improper positioning of the cable "eye" fitting which required the cable to make a 90-degree bend over a short radius. The proper position for the cable "eye" fitting should be "down" rather than horizontal. It was suggested that a check for this condition be included in each preflight inspection.

Part total time-2,039 hours.

CESSNA

Cessna Models All Single-Engine Turbocharged Aircraft — **Engine Turbocharger Hose Failures 8120**

Information for this article was furnished via FAA Safety Recommendation 96.188.

The FAA continues to receive failure reports concerning engine oil hoses attached to the turbocharger wastegate valve. Cessna recommends that all engine hoses be replaced every 5 years. One of the most recent failure reports indicated the engine was overhauled less than 12 months prior to failure of the oil hose. Records indicated this hose had been in service for over 15 years.

As a result of the numerous oil hose failure reports, the FAA has issued Airworthiness Directive (AD) 88-22-07. It has been recommended that the FAA issue additional AD's to limit the service life of all engine compartment hoses to 5 years. Inspection personnel and aircraft owners are encouraged to recognize the importance of maintaining engine compartment hoses in a serviceable condition.

Part total time not reported.

Cessna Models Numerous — **Main Landing Gear Wheel Cracks 3246**

An article was printed in the September 1997 issue of this publication which dealt with the subject of wheel half cracks. The following is offered to provide additional information.

Two important references were omitted from the original article which serve to clarify the information and give specific applicability. Cessna Single-Engine Service Letter SE77-28 dated July 25, 1977, and McCauley Accessory Division Service Bulletin WB-2 dated July 1, 1977, contain information about defects and the replacement of both aluminum and magnesium wheel assemblies. These

documents give examples of typical damage which may be found. Maintenance personnel should be familiar with these documents.

Cessna Model 152 — **Flight Control Cable Damage 2730**

During a 100-hour inspection, the upper elevator trim tab control cable was found to be severely damaged in two locations.

After removal of the 3/32 inch, 7 by 7 cable, the damaged areas were found to be located just forward and aft of the pulley set used to change the direction in the horizontal stabilizer. The damaged area forward of the pulley was held together by only one cable strand, and the area aft of the pulley was held by two cable strands. This aircraft had undergone an annual inspection approximately 6 months prior to this occurrence, and the submitter speculated this damage had begun many years before its discovery. It was suggested that closer attention to detail during scheduled inspections may have prevented this defect from reaching such a severe state.

Part total time-6,065 hours.

Cessna Model 182Q Skylane — **Defective Battery Vent System 2571**

During a 100-hour inspection, the maintenance technician discovered that the plastic battery vent/drain tube was split.

There was evidence that battery acid and fumes had been leaking into the rear fuselage area. The battery box was mounted above the elevator and rudder control cables. Although this defect was found before flight control cable damage could happen, it is important to closely inspect this area for damage even if the battery vent/drain tube is found to be serviceable. If the area below the battery box and vent/drain tube is cleaned with a base solution of baking soda and water, the presence of any acid will quickly become evident. Proper lubrication of the flight control cables, in accordance with the manufacturer's technical data, should follow this process.

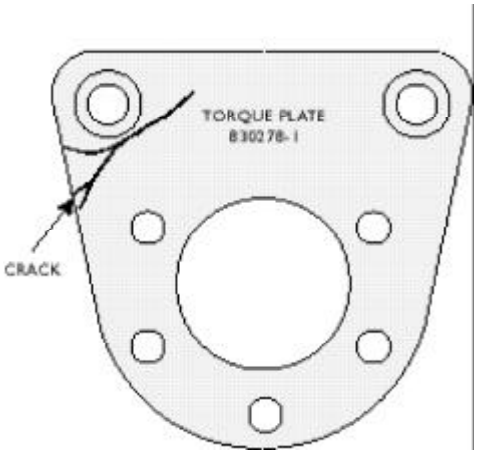
Part total time not reported.

Cessna Model U206G Turbo Stationair — **Brake System Defect 3242**

During a maintenance preflight inspection, a rub mark was observed on the inside of the left wheel brake disk.

Further investigation disclosed that the brake torque plate (P/N 830278-1) was cracked in the area of the bushing for the caliper slide pins. (Refer to the following illustration.) The submitter stated this was the second torque plate he had found to be cracked on the left wheel brake. This is an area to give special attention during scheduled inspections and maintenance.

Part total time-4,714 hours.



Cessna Model 300 Series and 400 Series Aircraft — **Nose Landing Gear Strut Service 3222**

Two FAA Safety Recommendations (96.064 and 96.065) have been issued as a result of

a Cessna Model 421B aircraft being operated with a flat nose landing gear shock strut.

Due to the flat strut, the nose gear was jammed in the wheel well and would not extend. This resulted in a landing with the nose gear in the "up" position, and the aircraft sustained substantial damage. Section 4 of the Pilot's Operating Handbook (POH) states that the nose gear will not retract into the wheel well if the shock strut is flat and may cause a malfunction of the retraction system. Chapter 2 of the maintenance manual describes the proper servicing of the shock strut. Proper servicing of the strut is indicated by 1.37 inches of strut extension with the aircraft on the ground and in a normal attitude.

Proper preflight inspections and maintenance of the nose landing gear are critical to safe operation of these as well as other aircraft.

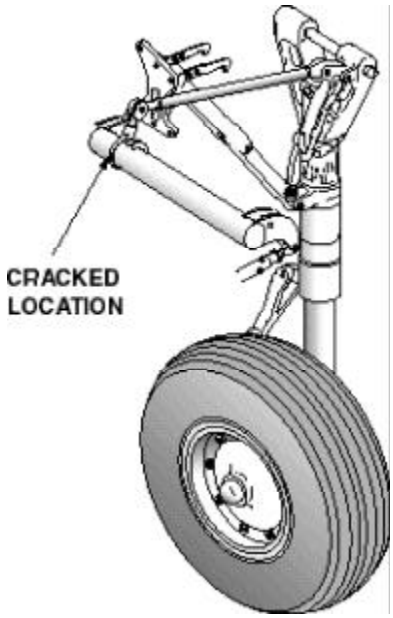
Part total time not reported.

Cessna Model 414 Chancellor — **Main Landing Gear Defect 3231**

During an annual inspection, the left main landing gear door torque tube assembly was found to be cracked.

The crack was located adjacent to a weld for the fork bolt attachment fitting at the aft end of the torque tube (P/N 5045010-19). (Refer to the following illustration.) The crack was approximately .5 inch long, and the submitter stated that corrosion was present. The Service Difficulty Program data base contains 42 additional entries similar to this report. Many of those reports related more severe failures which resulted in substantial aircraft damage and/or personal injuries. Also, this torque tube is used on several other Cessna aircraft models. Airworthiness Directive (AD) 76-13-07 and Cessna "Multi-Engine Service Letter" (SL) ME75-23 deal with this subject. Maintenance personnel should concentrate their attention on this area during scheduled inspections and comply with AD 76-13-07 and SL ME75-23.

Part total time-2,844 hours.



Cessna Model 414A Chancellor — **Engine Exhaust System Defect 7810**

During a normal maintenance inspection, an exhaust stain was noticed along the weld of an engine exhaust system elbow.

The exhaust system elbow connected to the "Y-fitting" for the Turbocharger wastegate valve. Closer examination revealed the elbow (P/N K19910299-10) was cracked at the periphery of both sides of the weld. This part was constructed of two 45-degree sections welded together to form the necessary 90-degree radius. This exhaust elbow was an "after market" PMA approved part. The aircraft had been modified in accordance with the Ram Aircraft Corporation Supplemental Type Certificate (STC) specifying the installation of water cooled Teledyne Continental, Model 520 engines. The submitter

stated that the original exhaust system elbow was manufactured from a single piece of exhaust pipe, and no defects have been found with the original equipment part.

The part total time was calculated to be approximately 1,855 hours.

Cessna Model 550 Citation — **Nose Landing Gear Uplock Failure 3230**

It was reported that the nose landing gear continually cycled when the gear was selected to the "up" position. The hydraulic pressure "on" light would illuminate each time the gear cycled.

An inspection of the system disclosed that the nose landing gear strut bearing nut (P/N 5542308-7) had "backed off" allowing the bearing to become loose. This caused the strut to extend beyond limits, and the nose gear uplock hook would not engage. Each time the nose gear came to the full "up" position, the uplock hook failed to engage, the hydraulic pump shut down, and the gear would then drop out of the wheel well until the hydraulic pump once again engaged.

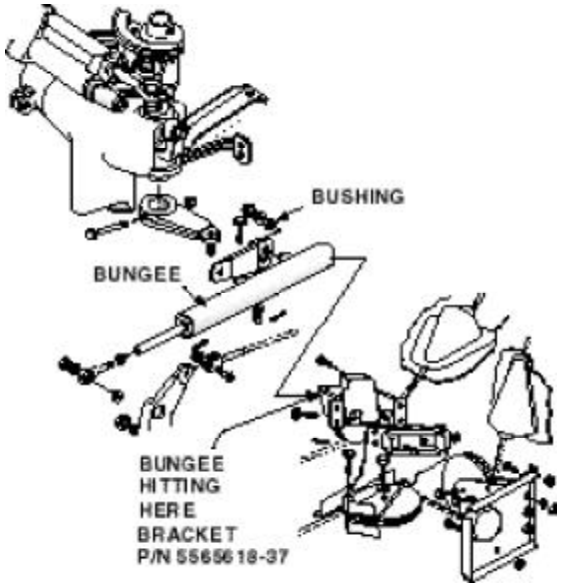
Part total time not reported.

Cessna Model 560 Citation — **Nose Landing Gear Steering Interference 3250**

While investigating a reported abnormal noise in the nose wheel well area, a wear mark was found on a bracket.

The worn bracket (P/N 5565618-37) is mounted on the left side of the wheel well and is used to support one of the nose wheel steering cable pulleys. (Refer to the following illustration.) Also, it appeared there was an exceptional amount of "slop" associated with the steering bungee. The submitter speculated that the bracket wear allowed the bungee to drop down and bind on the pulley bracket when the nose wheel "goes full travel" to the left. If not corrected, this could cause separation of the pulley bracket from the structure when the nose wheel is moved back to the right position.

Part total time-1,829 hours.



MOONEY

Mooney Model M20C Ranger — **Propeller Installation 6122**

This aircraft had an Edo Aire (Garwin) three-blade propeller installed in accordance with Supplemental Type Certificate (STC) SA4529NW.

After 3 hours of operation, the propeller began to surge 100 to 200 RPM when set to 2,400 RPM. After numerous tests, the submitter determined the propeller governor was not supplying a sufficient volume of oil to properly operate the propeller. The submitter stated the STC instructions did not mention the oil volume required to properly operate the propeller governor.

Aircraft total time-1,633 hours.

PIPER

Piper Model PA-12 Super Cruiser — **Engine STC Installation 7100**

The following article was submitted by Mr. Raymond Cloutier, Aviation Safety Inspector (Airworthiness), FAA Flight Standards District Office located in Portland, Maine.

During the past 12 months, there have been an increasing number of FAA Forms 337 reviewed which reference installation of a Textron Lycoming Model O-320-B2A or -B2B, 160 horse-power engine (or some other Textron Lycoming model above the original O-320 engine) on PA-12 aircraft. The data being used for these installations are Supplemental Type Certificates (STC's) SA4-519 and SA4-456. STC SA4-519 was held by "H.M. Ruberg" and is now owned by "McKenzie Flying Service, Inc." STC SA4-456 is held by Kenmore Air Harbor, Inc. Neither of these STC's, or their revisions, stipulate a model designation of the Textron Lycoming O-320 engine nor do they specify "O-320 Series." STC's SA4-519 and SA4-456 are applicable **ONLY** to the original Textron Lycoming Model O-320 (or O-320-A1A as it was later redesignated) engine and are not applicable to any other model in the O-320 series.

At this time, there are several PA-12 aircraft operating with these STC's that have an engine installed other than the O-320 approved by these STC's. Many owners, operators, and others, having reviewed STC's SA4-519 and SA4-456, have incorrectly concluded that the STC's are applicable to the O-320 engine series. Any Piper PA-12 aircraft currently operating with a standard airworthiness certificate having a Textron Lycoming engine installed in accordance with STC SA4-519 or SA4-456 that is other than the original O-320, 150 horse-power engine may be operating in an unairworthy condition due to an unapproved engine installation. Owners, operators, and maintenance technicians are advised to review their FAA Forms 337 to confirm their aircraft are in compliance with STC's SA4-519 and SA4-456. Some of these improper installations may have been accomplished by the "field approval" process. Field approvals involving aircraft powerplants require FAA engineering concurrence and must be coordinated with the local FAA Flight Standards District Office.

Part time not applicable.

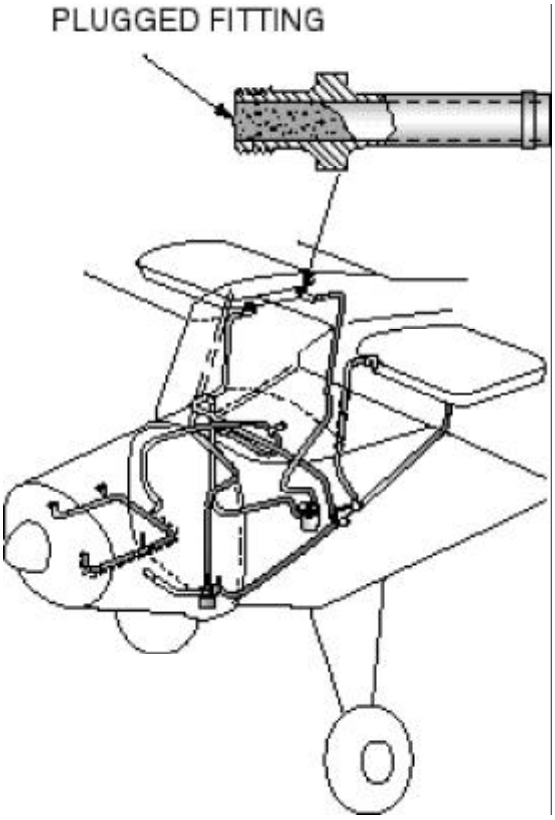
Piper Model PA 20 Pacer — **Fuel System Restriction 2820**

During takeoff, the aircraft lost engine power just after lifting off. The pilot elected to attempt a landing on the remaining 100 feet of runway. At the end of the remaining 100 feet, the aircraft "nosed over" and came to rest in an inverted position.

After repair of the structural and sheet metal damage, an inspection of the fuel system revealed the right fuel tank aft outlet fitting (P/N AN840-6D) was completely plugged. (Refer to the following illustration.) The material blocking the outlet fitting appeared to be tightly compacted "dirt" from an unknown source. It was speculated that over many years sediment from many gallons of fuel, "dirt," and other contaminates had collected in sufficient quantities to stop the engine fuel supply. The criteria for this aircraft accident required the right fuel tank to be selected as the sole source of engine fuel supply.

It would be wise to inspect and clean the fuel systems of older aircraft at frequent intervals to eliminate contamination which, if not removed, could result in an accident.

Part total time not reported.



Piper **Nose Landing Gear**
Model PA 24 **Failure**
Commence **3230**

The pilot reported that the nose landing gear failed to retract after takeoff. The landing gear control circuit breaker opened, and all attempts to lower the nose gear failed. The nose gear collapsed during landing.

During an investigation, it was determined that while the nose gear was in transit toward the "up" position, it traveled outside of the "Y-channel." This caused the gear to attempt to retract in a "side-ways" position, and the control circuit was overloaded. The submitter recommended the nose gear be checked to ensure alignment and condition of the roller assembly (P/N 14976-15) at every opportunity.

Part total time not reported.

Piper **Excessively Rich**
Model PA 24-260 **Fuel/Air Mixture**
Comanche **7322**

The mechanic/owner/pilot of this aircraft reported that during flight the engine began running rough. The fuel/air mixture was leaned, and the engine performance improved. After landing, engine power could not be maintained due to an excessively rich fuel/air mixture.

During an investigation it was found that the fuel servo seal (P/N 2539561) was defective and leaking fuel into the air chamber. The submitter questioned the integrity of the seal and suggested it be closely inspected prior to installation. The FAA Service Difficulty Program data base has one other similar entry.

Part total time-30 hours.

Piper **Wing-Walk Area**
Model PA 28-161 **Structural Damage**
Warrior **5730**

Skin weakness was reported by the pilot in the wing-walk area.

An investigation revealed the reinforcement doubler, riveted to the lower side of the wing-walk skin (P/N 62061-02), was cracked all along the butt rib area. The Service Difficulty Program data base contains 22 other entries concerning a defect with this part. These 22 reports cover several other aircraft models on which these parts were installed. This area deserves full attention during scheduled inspections.

Part total time-6,547 hours.

Piper **Elevator Spar Cracks**
Model PA 31 Series **5521**

This is a followup to an article published on page 14 of the August 1997 edition of this publication. The additional information was furnished by Mr. Scott Myers, Aviation Safety Inspector (Airworthiness), FAA Flight Standards District Office located in Minneapolis, Minnesota.

Two reports from a repair station concerning elevator spar cracks were investigated. Both of the defects occurred on the left elevator spar of like aircraft. A review of the Service Difficulty Program data base revealed an additional 24 reported cases of elevator spar cracks. A number of these reports indicate that the defect was discovered during compliance with Piper Service Bulletin (SB) 998, and these defects were not visible until the elevator had been removed and modified in accordance with the SB.

The reporting repair station and the FAA inspector in this case have recommended this issue be made the subject of an Airworthiness Directive (AD). This recommendation has been put in the form of an FAA Safety Recommendation, and at the present time, is being processed as a proposed AD. This action was prompted by the considerable age of the affected aircraft and the negative safety implications of an in-flight elevator spar failure.

Part total times not reported.

Piper **Fuel Hose Failures**
Model PA 31-310C **2820**
Navajo

During an annual inspection, several fuel hoses were found to be deteriorated and leaking.

The hoses (Aeroquip P/N 601000-8) were used on the fuel filter and fuel selector valve. The hoses were very hard and began to leak through the braid when they were disturbed. The submitter did not identify how many fuel hoses were defective. When the hoses were removed for replacement, the identification tag marking ("2 Qtr 74") indicated they had been manufactured in the second quarter of 1974. This would make the hoses over 23 years old and far beyond their intended life limit. We continue to receive defective hose reports in spite of the numerous articles and other publicity this subject has received over the past several years. The cost and/or replacement time involved with flexible hoses should not deter their removal before they become a hazard to safety.

Part total time-2,218 hours.

Piper **Ineffective Propeller**
Model PA 31-325 **Control**
Navajo **6100**

The pilot reported that during cruise flight, the left engine propeller RPM began to decay. The propeller control was advanced, and the RPM remained constant for approximately 1 hour. However, without warning, the propeller went to the "feathered" position.

After a safe landing, maintenance technicians discovered the plug (P/N 71640) inside the engine crankshaft was loose. This allowed oil to bypass the propeller governor. No metal was found in the engine oil sump or filter. After properly seating the plug, an operational test revealed normal propeller operation. It would be a good idea to check this plug for security and proper installation at every opportunity.

Part total time-2,538 hours.

Piper **Engine Failure**
Model PA 32-300 **7414**
Cherokee Six

During a fatal aircraft-accident investigation, the cause was determined to be a magneto failure. After takeoff, the aircraft was operated for just less than an hour when the pilot reported experiencing engine problems. The aircraft impacted the water after suffering loss of engine power.

During the accident investigation, it was determined that the left magneto (Slick P/N 6351) had completely failed. The impulse coupling (P/N M3333) housing was cracked, and one pawl was loose due to a rivet failure. The other pawl was found jammed between the housing and the coupling body. The magneto drive gear, located in the engine accessory gear box, had one broken tooth and

the intermediate gear had several teeth missing. The engine used in this aircraft was a Textron Lycoming, Model IO-540. The FAA Service Difficulty Program data base contains three other reports of magneto failures on like aircraft and engines. All four of these reports involved failure of the left magneto. In two of the four cases, engine starting anomalies had been reported prior to magneto failure. Records indicated this magneto had been operated for 748 hours.

In another case, the magneto impulse coupling failed, resulting in engine stoppage. This magneto had 1,287 operating hours since new. Severe wear caused the pawls to become loose and jam. The magneto seized with one pawl jamming under the other. Another magneto (Slick P/N 6351) was installed and failed after a few hours of operation.

It was recommended that all owners of Piper PA-32-300 aircraft, equipped with Textron Lycoming IO-540 series engines using Slick (P/N 6351) magnetos and Slick (P/N M3333) impulse couplings, perform the following actions.

Remove and inspect the left magneto (also the right magneto if equipped with an impulse coupling) if hard starting difficulties occur. It was also recommended that the magneto be inspected following each 250 hours of operation or any time aluminum "filings" are detected in the engine oil. Remove and inspect the impulse coupling, pawl clearance, rotor shaft for dimpling (where the pawl heel strikes the rotor shaft), and the pawl stop pin in accordance with Unison Industries, Slick Aircraft Products, Maintenance and Overhaul Manual (P/N L-1363) for the 4300-series magnetos and 6300-series magnetos. Please report all findings by submitting FAA Form 8010-4, Malfunction or Defect Report, if any of these conditions are found.

Information for this report was submitted by Mr. Nick Miller, FAA Service Difficulty Specialist, with the Aircraft Certification Office located in Chicago, Illinois. At this time the accident investigation is not complete. If further pertinent information is reported, it will be printed in a future edition of this publication.

Piper
Model PA 32-301
Saratoga

Aileron Control Cable Interference
2710

During a scheduled inspection, the aileron control system was binding at one point in its travel.

Further investigation disclosed that the right aileron/rudder interconnect clamp was catching on a broken bracket. The bracket (P/N 62679-00) was located at the forward attachment point for the wing flap handle. The submitter speculated that the bracket was broken by "stepping on the flap handle or excessive force being applied during retraction and/or extension of the flaps." Care should be taken to avoid abusive forces when operating all aircraft systems.

Part total time-1,946 hours.

UNIVAIR

Univair (Stinson)
Model 108-1
Voyager

Flight Control Column Corrosion
2701

During a scheduled inspection, the flight control column (P/N 108-3041100) was found to contain water.

The condensation had accumulated to approximately one-quarter of a cup. The control column has a drain hole for the elimination of condensation; however, the hole was plugged. The submitter stated he had knowledge of another occurrence of this defect which resulted in an accident and substantial aircraft damage. The presence of moisture presents not only the possibility of corrosion damage, but also damage from the moisture freezing and causing damage to the control column.

It was recommended that the aluminum plug be removed from the bottom of the control column, and the interior be treated with a corrosion inhibiting material.

Part total time-2,456 hours.

HELICOPTERS

BELL

Bell
Model 206 Series

Defective Hoist Cable Cutter Alignment
2500

The information for this article was submitted by Ms. Cindy Lorenzen, an Aeronautical Engineer, with the FAA Aircraft Certification Office (ACE-117A) located in Atlanta, Georgia.

During operations using a Breeze-Eastern Model BL-16600 hoist, the hoist cable was found to be partially severed. After examination of the hoist, the cable cutter was found to be misaligned resulting in interference between the sharp edge of the cutting barrel and the cable.

A Customer Advisory Bulletin (CAB-100-55) has been issued by Breeze-Eastern for all Model BL-16600 series hoists. This hoist model is installed as original equipment by Bell Helicopter on Model 206 series helicopters. This hoist may also be installed in accordance with Aeronautical Accessories Supplemental Type Certificate (STC) SH3191SO on Bell 206A/B series helicopters, STC SR00299AT on Bell 206L series helicopters, and STC SR01295AT on Bell 407 series helicopters. Breeze-Eastern also holds an FAA Parts Manufacturing Approval for these hoists installed on 206L series helicopters. The CAB-100-55 requires inspection of the alignment of the cable cutter, inspection of the cable, and procedures for proper realignment of the cable cutter. A copy of CAB-100-55 may be obtained from Breeze-Eastern, at telephone number (800) 929-1919, or from Aeronautical Accessories, at telephone number (800) 251-7094. Bell Helicopter will issue a separate service bulletin.

Breeze-Eastern is working on a permanent fix for this problem. When this information becomes available, the FAA will issue an Airworthiness Directive (AD) to mandate a correction.

Bell
Model 206B III
Jet Ranger

Transmission Gear Shaft Worn
6310

While completing a scheduled inspection, the main rotor transmission gear shaft (P/N 206-040-040-005) was found severely worn.

Further investigation disclosed that the “sun gear” and the gear shaft were both worn far beyond acceptable limits. The spline on these parts was approximately 50 percent worn. The submitter speculated the cause of this defect was the length of time the parts had been installed and a corresponding breakdown of the lubricant. The manufacturer’s maintenance manual requires inspection of these parts at 1,500 hour intervals. Since this aircraft had been operated approximately 100 hours per year in the past, it had been 9 years since the parts had been inspected. It was recommended the manufacturer revise the inspection interval for the gear shaft and “sun gear” to 1,500 hours or 4 years, which ever occurs first. The overhaul limit is 4,500 hours.

Part total time-2,997 hours.

Bell
Model 214ST
Super Transport

Possible Defective Float Assemblies
3212

Bell Helicopter Textron, Inc. has recently issued Alert Service Bulletin (ASB) 214ST-97-77, and Air Cruisers, Inc. has issued Service Bulletin 903-25-02. Both of these publications advise that float assemblies (P/N’s 214-052-200-105 and -106) may have been manufactured with an incorrectly installed “girt” attachment.

The ASB requires that these float assemblies be returned directly to the Air Cruisers, Inc. for inspection and repair of the "girt" attachments. Air Cruisers, Inc. has established a rotating loaner pool to assist operators with quicker turnarounds. Copies of ASB 214ST-97-77 may be obtained upon request to Bell Helicopter Textron, Inc., P.O. Box 482, Fort Worth, TX 76101.

ENSTROM

Enstrom Model F28F Falcon

Main Rotor Transmission Wear 6320

It was reported that the main rotor transmission chip light illuminated at 7 to 10-hour intervals after installation of a new transmission.

The transmission continued to "make metal" until it was finally removed from service. Prior to removal, the transmission generated a piece of metal that was approximately .25 inch long. According to the submitter, the manufacturer had suggested the installation of a "less sensitive chip plug" and stated "metal generation was normal break-in wear for this transmission." The submitter has experienced an average life for this transmission of 200 to 700 operating hours. The published time before overhaul is 1,200 hours.

Part total time-174 hours.

SCHWEIZER

Schweizer Model 269C Engine Textron Lycoming Model HIO-360

Engine Failure 8520

During an orbit maneuver at 500 feet altitude, a loud abnormal "clunking" sound was heard, and a "jerk" was felt through the airframe. At the same time, the engine failed, which required an immediate forced landing. Both occupants were injured, and the helicopter sustained substantial damage.

During the accident investigation, the number 4 connecting rod was found protruding from the engine case. Both of the connecting rod crankshaft attachment bolts (P/N LW12596) were broken, and it was speculated their failure caused the engine to fail.

The engine had been overhauled in November 1996; however, it could not be determined if the connecting rod bolts had been replaced at that time.

Part total time not reported.

AMATEUR, EXPERIMENTAL, AND SPORT AIRCRAFT

REVOLUTION HELICOPTER

Revolution Model Mini 500

Flight Control Rigging 6200

The information for the following article was furnished by Mr. Fred Maupin, Aviation Safety Inspector (Airworthiness) FAA Flight Standards District Office located in Houston, Texas.

As the result of an accident investigation, it was determined that the flight control rigging instructions supplied by the kit manufacturer may be inadequate. Physical evidence from the accident site indicated the possibility that rigging of the rotor primary flight controls was not correct.

Section 7 (Rigging and Balancing) of the kit manufacturer's Assembly and Maintenance Manual contains instructions for rigging the primary helicopter flight controls. These instructions are ambiguous and appear to omit specific tolerances, limits, measurements, dimensions, and other critical criteria which

would ensure safe operation. There are other sections of the maintenance manual, operations manual, and assembly instructions which need to be improved.

Some of the helicopter primary flight control attaching parts were less than standard quality, such as hardware and rod-end fittings that had no "witness hole" to inspect for proper thread insertion. This is not a certificated aircraft; however, in the interest of safety, the selection of hardware meeting aviation quality standards and having "double security" (rod-end jamnuts with safety wire provisions) for primary flight controls would add very little to the cost of the kit.

A review of the FAA Service Difficulty Program accident/incident data base revealed 12 reports involving this aircraft.

PROPELLERS AND POWERPLANTS

ALLISON

Allison **Engine Failure**
Model 250-C20 **7313**

This engine was installed in a Hughes Model 369D helicopter. During flight, the engine failed without warning. A safe run-on landing was made.

An investigation revealed the engine had failed due to fuel starvation. The fuel nozzle screen was found contaminated with foreign material which severely restricted fuel flow to the engine. The filter screen was collapsed by excessive pressure during high engine power settings just prior to failure.

The fuel nozzle screen is the last of three filters in the engine fuel system, and there is no bypass system provided. The first filter is in the fuel pump and has an "impending bypass" indicator light. The second filter is located in the fuel control and also has a bypass system; however it does not have an indicator light. The engine maintenance manual requires a fuel pump bypass valve operational test be accomplished when the fuel pump filter is replaced as part of the 300-hour inspection. It is possible that this procedure is not being properly accomplished during inspections. The fuel pump bypass valve operational check identified in the operations and maintenance manual is a complete test of the system and not merely observing the "impending bypass" light for illumination.

Part total time not reported.

HARTZELL

Hartzell **Autofeather Failure**
Model HC-B5MP-3A **6123**

The pilot reported the propeller would not "autofeather" during engine shutdown. The propeller was installed on a Shorts Model S360 aircraft.

Disassembly and inspection of the propeller disclosed the feathering spring (P/N A3496) was broken into seven pieces. This defect disabled the propeller feathering mechanism. The submitter could offer no cause or cure for this defect, and no other details were reported.

Part time since overhaul-2,059 hours.

ACCESSORIES

UPDATE ON DEFECTIVE INSTRUMENT AIR FILTERS

In the November 1997 edition of this publication, we printed an article concerning defective instrument air filters manufactured by Rapco. This article gave specific lot and part numbers which the manufacturer suspected may have been defective. The FAA issued Airworthiness Directive (AD) 97-16-10,

dated July 31, 1997, which required discontinuing use of specific instrument air filters. Please refer to AD 97-16-10, the previously mentioned Alerts article, and the manufacturer's newsletter "Rapco, Inc. Reporter," dated January 1, 1997, for specific information.

Since the previous Alerts article was published, two reports were received stating instrument air filters of the same type and part number were found defective. These filters (P/N RA-1J4-7) were from lot number 02797 which was not included in the applicability statement in AD 97-16-10. At the present time, the FAA is conducting a thorough investigation of this situation, and the results will be published when a resolution is reached.

Until this problem is resolved, maintenance personnel and operators are cautioned to closely inspect all instrument air filters before installation and be suspicious of those previously installed.

AIR NOTES

AIRWORTHINESS DIRECTIVES (AD'S) ISSUED IN OCTOBER 1997

AD 84-23-06 R1	Pilatus Britten-Norman Models BN-2, BN-2A, BN-2B, BN-2T, and BN-2A MK. 111 series airplanes which required inspecting brackets, bolts, and brushings on engines.
AD 86-07-02 R1	Pilatus Britten-Normal BN2A MK.111 series which required inspecting junction of torque link lug and MLG torque link.
AD 97-20-14	Mitsubishi MU-2B airplanes which required adding information to Limitations Section of AFM.
AD 97-22-01	Pilatus Britten-Norman BN-2A, BN-2B, and BN-2T airplanes which required inspection of torque link lug and MLG.
AD 97-22-02	Pilatus Britten-Norman BN-2, BN-2A, BN-2B, and BN-2T series airplanes which required modifying upper-engine brackets on wing front spar.
AD 97-22-03	Extra Flugzeugbau EA-300/200 airplanes which required installing a seatbelt safety cover.
AD 97-22-08	Pilatus Aircraft PC-6/B1-H2, PC-6/B2-H4, and PC-12 airplanes which required amending Limitations Section to AFM.
AD 97-22-09	Dornier Luftfahrt 228 series aircraft which required amending Limitations Section of Operating Handbook.
AD 97-22-10	Partenavia Costruzioni Aeronauticas AP68TP series which required amending Limitations Section of AFM.
AD 97-22-11	Industrie Aeronautiche Piaggio P-180 airplanes which required amending Limitations Section of AFM.

AD 97-22-12	SIAI Marchetti Models SF600 series airplanes which required amending Limitations Section of AFM.
AD 97-22-15	Bell 407 priority letter which required tail rotor drive coupling inspections.
AD 97-15-16	Bell 430 helicopters which required inspection of main rotor adapter assemblies.
AD 97-20-16	Eurocopter Deutschland Model MBB-BK117 series which required inspections of surfaces of tail boom vertical fin spar.
AD 97-20-15	Hiller UH-12 models which required a dye-penetrant inspection of main rotor outboard tension bar pin.
AD 97-20-12	McDonnell Douglas MD-900 helicopters which required replacing certain airworthy bearings.
AD 97-21-07	Textron Lycoming T5313 series engines which required installation of accessory drive carrier assemblies.
AD 97-21-08	General Electric CT58 series turboshaft engines which required removal from service of certain stages 1 and 2 forward cooling plates.
AD 97-21-02	Teledyne Continental E-165, E-185, E-225, O-470, and IO-470 series reciprocating engines which required removal of affected cylinders.
AD 97-21-01	MT-Propeller Entwicklung MTV-3-B-C propellers which required repetitive dye-penetrant inspections or eddy-current inspections.

HAPPY HOLIDAYS

REFLECTIONS AND PROJECTIONS

As we approach the end of another productive year, let us reflect upon the events of the past and look with enthusiastic optimism to the future. May the experiences of the past year guide us to decisions which will increase aviation safety in the years to come.

Over the past year, it has been our privilege to provide the aviation community with this media for disseminating your aviation experiences. The intent is to create a safer aviation environment through the interchange of information. With your input and help, this publication (in its present form) has existed since August 1978. Since that time, there have been many changes in aviation. Some of the changes may not have been good; however, when all changes are considered, aviation has taken great strides forward. Many of the innovations and advancements have taken place because one person had an idea or

wondered how something could be done better.

As we ponder and project the future of aviation, we have visions of great changes to come which now are only a glimmer in someone's mind. So, it is with august anticipation, we look to see what each new day will present. Challenges and problems are met with solutions and changes.

The staff of the FAA's Designee Standardization Branch, AFS-640, would like to take this opportunity to wish all our readers and the entire aviation community a very happy, prosperous, and safe holiday season.

MERRY CHRISTMAS AND HAPPY NEW YEAR!

PROFESSIONAL RIDER

The following article is being printed with the generous permission of the author, Mr. Pete Kelley. I feel sure that we all must have experiences similar to those related by Mr. Kelley, and it seems appropriate, especially at this time of year, to reminisce and realize how we came to this point in life.

> Thump, thump, thump, thump. The large single cylinder BSA motorcycle was propelled through the summer morning air as if by the very heart of its youthful rider. It was a Saturday morning in 1971. I was 18, high school was over, and my draft lottery number was 318. I was free for life it seemed, and I was bound for my friend's house to whittle away the day. The sound waves from the trumpeting exhaust radiated out to all nearby creation, and in some youthful philosophical construct, I believed it communicated what I was. It probably did that more accurately than I ever realized, with most of the neighbors thinking "there's that fool kid again riding his loud motorcycle." The farmers were mowing the second cutting of hay, and the country air in up-state New York was ambrosial.
>
> The soft distant thumping encroached steadily upon the Malara property, culminating with the rowing of the engine as I wheeled into the driveway. My best friend, Pat, came out of the house, and his older brother Bobby looked up from under the hood of his 1965 Chevelle as I picked a prime piece of the sidewalk to park my bike. As I dismounted, the first oil drop started to form on the bottom of the engine casing of the motorcycle. A black, lifeless blood. A picture of sin that might not wash out. The drop grew as friendly insults were exchanged. Bobby had come too close to losing a race the night before, and his reputation was on the line. As we talked, the drop of oil continued to grow, stretched, and birthed with velocity.
>
> Mr. Malara stepped out of his shop just as the oil drop hit his sidewalk, and suddenly I was thrust back into the school of life. Black and white, right and wrong, one way and one way only, think ahead, double check, ask if you are not sure, be responsible for your actions, don't assume anything. The details are endless but the concepts are sound and few.
>
> Mr. Malara was a giant, and I was a gnat. He was an A&P and A.I. of distinction, an award winning aircraft restorer, a Designated Examiner, a pilot and the founder and Chief Instructor of the Riverside School of Aeronautics. He was forever complaining about some detail of right and wrong. I was a tinkerer and seldom right. I feared and respected Mr. Malara. I attended his A&P school. I spent much time in his shop and at his kitchen table. It was with his recommendation that I secured my first airline job with a commuter.
>
> All that happened long ago and far away. In the years that followed I gained much experience and some success. I paid my

dues and kept the professional faith. I am older now and the industry has changed. All four of the airlines I have worked for are either out of business or have been reorganized. Recently, I set out to start over again and having been away from my tools for 8 years, I accepted an entry-level A&P position performing heavy check work. I quit after 1 week because of the unprofessional methods I observed. The day I quit I returned home to be informed of Mr. Malara's death.

It took a few days to sink in, and it did not sink in completely until I tried to figure out how old Mr. Malara was when I first met him. It turned out that he had been 44, my present age exactly! Suddenly I realized that I owed all of my professional maintenance standards to him. And that with Mr. Malara gone and those of his ilk with him, it was now up to the mechanics of my generation, in the afternoon of their careers, to instill those same professional standards in the new technicians entering the field. I feel sure that young people today would benefit greatly from one of Mr. Malara's lectures on why one does not park a lousy oil-dripping motorcycle on someone else's sidewalk.

We do not convey professionalism by loud talk or fast work. We do convey that we are professional by demonstrating that there is only black and white, right and wrong, one way and one way only, by thinking ahead, double checking, asking when we are not sure, being responsible for our actions, and not assuming anything!

ALERTS ONLINE

This publication is now available through the FedWorld Bulletin Board System (BBS), via the Internet.

You may directly access the FedWorld BBS at telephone number (703) 321-3339. To access AC 43-16, General Aviation Airworthiness Alerts, through the Internet, use the following address: "http://www.fedworld.gov/ftp.htm". This will open the "FedWorld File Transfer Protocol Search And Retrieve Service" screen. Page down to the heading "Federal Aviation Administration" and select "FAA-ASI". The file names will begin with "ALT", followed by three characters for the month, followed by two digits for the year (e.g. "ALTJUN96.PDF").

Also available at this location are the Service Difficulty Reports (SDR's) for the past 2 months, which may be of interest.

The Regulatory Support Division (AFS-600) has established a "HomePage" on the Internet, through which the same information is available. The Internet address for the AFS-600 "HomePage" is: "http://www.mmac.jccbi.gov/afs/afs600". Also, this address has a large quantity of other information available. There are "hot buttons" to take you to other locations and sites where FAA Flight Standards Service information is available. If problems are encountered, you can "E-mail" us at the following address.

If you wish to contact the staff of this publication, you may do so by any of the means listed below.

Editor: Phil Lomax, AFS-640
Telephone No.: (405) 954-6487
FAX No.: (405) 954-4570
or (405) 954-4748

Internet E-mail address:
ga-alerts@mmacmail.jccbi.gov

Mailing Address:
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ATTN: AFS-640 ALERTS
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We welcome the submission of aircraft maintenance information via any form or format. This publication provides an opportunity for you to inform the general

aviation community of problems you have encountered as well as bringing them to the attention of those who can resolve these problems. Your participation in the Service Difficulty Program reporting process is vital to ensure accurate maintenance information is available to the general aviation community.

ELECTRONIC AVAILABILITY OF INFORMATION

In light of the previous article, we solicit your input and ideas for the future of this publication. The electronic information media has made available a vast amount of information in a more expedient and efficient manner. We believe the expanded use of this media can bring about the conveyance of safety information in a more efficient and timely manner.

We are currently distributing approximately 28,000 printed copies of this publication each month, and the distribution number continues to increase. The cost for publishing, printing, and mailing this publication has also increased, and there has been a substantial negative impact on our budget allotment.

In an effort to save tax dollars and make better use of the electronic media, we encourage our readers to cancel their printed copy subscription to this publication and use the computer to download the monthly issues. (The instructions for downloading the Alerts were given in the preceding article.) We will be happy to help you if you require further assistance. Some of you may not yet have the equipment necessary to receive the information electronically, and you are welcome to continue receiving it in the printed form.

There have been some efforts to charge an annual subscription fee for this publication. So far, these efforts have not been given much credence. We will make every effort to keep this a free-of-charge publication. However, we need your input and ideas. Would you be willing to pay a nominal subscription charge for this publication?

We appreciate your interest in this publication and the opportunity to serve you. Please offer any comments, questions, or suggestions to us via any of the means listed in the preceding article.

SUSPECTED UNAPPROVED PARTS SEMINAR

As announced in previous editions of the Alerts, the Designee Standardization Branch, AFS-640, will begin presenting the Suspected Unapproved Parts Seminar. The first seminar will be held on January 14, 1998, in Sacramento, California. The second seminar will be held on January 28, 1998, in Fort Worth, Texas.

Additional seminar dates will be announced in the Alerts, the Designee Update Newsletter, and on the Internet under FedWorld.gov. You may access the FedWorld BBS directly at (703) 321-3339. You may access the Alerts through the Internet, using the Regulatory Support Division, AFS-600, “HomePage” at the following address.

http://www.mmac.jccbi.gov/afs/afs600

The seminar will discuss the following:

1. What is an approved part?
2. How can approved parts be produced?
3. What is a suspected unapproved part?
4. How is a suspected unapproved part reported in accordance with FAA Order 8120.10A, Suspected Unapproved Parts Program, and utilizing FAA Form 8120-11, Suspected Unapproved Parts Notification?

The cost of this 8-hour seminar will be $60. The seminar may be used for the Inspection Authorization (IA) renewal training

requirement contained in Title 14 of the Code of Federal Regulations (14 CFR) part 65, section 65.93(a)(4).

The seminar is open to the aviation industry. Anyone wishing to attend may telephone (405) 954-0138. Payment is required in advance by using VISA, MasterCard, or a check.

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For your convenience, FAA Form 8010-4, Malfunction or Defect Report, will be printed in every issue of this publication.

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Enter pertinent data:	MANUFACTURER	MODEL/SERIES	SERIAL NUMBER
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3. POWERPLANT			
4. PROPELLER			

5. SPECIFIC PART (of component) CAUSING TROUBLE

Part Name	MFG. Model or Part No.	Serial No.	Part/Defect Location

6. APPLIANCE/COMPONENT (Assembly that includes part)

Comp/Appl Name	Manufacturer	Model or Part No.	Serial Number

Part TT	Part TSO	Part Condition	7. Date Sub.

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